LCLS DIRECTORATE
Experimental Facilities Division

NEH Hutch 1 Searcher Certification Workbook

SLAC-I-030-50300-001

NATIONAL ACCELERATOR LABORATORY

http://lcls.slac.stanford.edu

NEH Hutch 1 Searcher Certification Workbook

XFDSO approval (signature/date): 8/5/09

XFD Operations approval (signature/date): 8/5/09

Revision Record

Revision	Date Revised	Section(s) Affected	Description of Change
R000	Aug 5th, 2009	All	Original Release

NEH Hutch 1 Searcher Certification Workbook

Preface

This workbook details the requirements for an XFD Staff member or trained User to be certified as being able to participate in an HPS search of NEH Hutch 1 at two different qualification levels, 'Second Searcher', and 'Search Leader', and serves as a record of this training.

Any individual who has completed the portion of this certification workbook up through the 'Second Searcher' qualification level may participate in a search of NEH Hutch 1 only in the role of 'Second Searcher' as defined in the *NEH Hutch 1 Search Procedure* [SLAC-I-030-30200-002]. Similarly, any individual who has completed the portion of this certification workbook up through the 'Search Leader' qualification level may lead the search or act as Second Searcher.

1.0 Prerequisite Training

Before completing any portion of this search certification workbook, one must have completed the following training: SON/EOESH, GERT, and ES&H Electrical Safety Course # 239 or the equivalent. In the case of LCLS Users who are not regular SLAC employees, they must also attend the URA Site Safety Talk. A complete list of LCLS User training prerequisites can be found in the in the *LCLS User Training Summary* [SLAC-I-030-30600-003].

2.0 Search Certification Requirements

The following pages detail what is required for each qualification level of search certification for NEH Hutch 1. Each page contains multiple line-item requirements to be completed by the trainee and initialed by the trainer, or initialed by the trainee in the case of required reading. At the bottom of each page, there is a place where for the trainer and the trainee's supervisor to sign and date when all line-items are complete, certifying the trainee as qualified to perform the search at the qualification level listed at the top of that page. After completion and sign-off of each page in this workbook, two copies should be made and distributed as per the instructions at the bottom of each pageNEH Hutch1 HPS Searcher Certification Workbook

Second Searcher Certification Worksheet

Trainee (Print Name):_____

Second Searcher Certification Started (Date):_____

3.0 **NEH Hutch 1 'Second Searcher' Certification Requirements**

Required Coursework (initialed by Instrument Scientist upon completion).

_____ Attend an Instrument Safety Talk with the Instrument Scientist.

Required Reading (initialed by trainee upon completion).

____ *NEH Hutch 1 Search Procedure* [SLAC-I-030-30200-002]

____ *NEH Hutch 1 Entry and Exit Procedures* [SLAC-I-030-30200-003]

____ *Lesson Learned: Ineffective Laser Lab Personnel Sweep* (The story of a 'near miss' at Jefferson Lab FEL, appended to this document)

Operating the HPS Controls (initialed by trainer upon completion)

Initial when the trainee has demonstrated an understanding of how to:

____ Enter and exit the NEH Hutch 1 HPS zone as specified in *NEH Hutch 1 Entry and Exit Procedures* (SLAC-I-030-30200-003).

____ Locate and operate the controls on the NEH Hutch 1 User's Panel.

____ Locate the *Hutch 1 HPS User's Manual* [CD-SS-PPS-06-11-08] for reference.

____ Locate the search timer status on the HPS EPICS display.

Searching the HPS Zone (initialed by trainer upon completion)

Initial when trainee has demonstrated an understanding of or familiarity with:

____ The purpose of a search of the NEH Hutch 1 HPS zone.

____ When searching is required for the NEH Hutch 1 HPS zone.

____ The trainee has correctly performed the role of Second Searcher in an actual or simulated search.

Trainer * (Signature/Date):_____

* A list of qualified HPS trainers can be found in *XFD Staff Training Qualification Summary* [SLAC-I-030-50100-002]

Supervisor (Signature/Date):_____

What to do with this form when complete:

SLAC Employees: Make one copy to be retained by your supervisor, and one for the XFD Documentation Specialist to update the *XFD Staff HPS Training Record Summary* [SLAC-I-030-50100-001].

LCLS Users: Make one copy for your supervisor, and one for the Floor Coordinators so they can update the *LCLS User Training Summary* [SLAC-I-030-30600-003] posted at the beamline. Floor Coordinators will file this record in the appropriate folder in the Floor Coordinator file cabinet to be picked up and retained by the LCLS User Research Administration.

NEH Hutch1 HPS Searcher Certification Workbook

Search Leader Certification Worksheet

Trainee (Print Name):_____

Lead Searcher Certification Started (Date):_____

4.0 NEH Hutch 1 'Search Leader' Certification Requirements

Search Leader Training Prerequisite (initials and date by qualified Search Leader upon completion)

To be certified as 'Search Leader', one must be observed correctly performing the role of Second Searcher for no fewer than three actual searches of the HPS Zone by someone certified as 'Search Leader'. The Search Leader who performs each of these three observations will print their name, sign, and date as indicated below:

	Printed Name of Search Leader	Signature	Date
1st Search			
2nd Search			
3rd Search			

Required Reading (initialed by trainee upon completion).

____ *Hutch 1 HPS User's Manual* [CD-SS-PPS-06-11-08]

____ Review the *NEH Hutch 1 Search Procedure* [SLAC-I-030-30200-002], paying special attention to the role of the Search Leader.

Demonstration of Knowledge (initialed by trainer upon completion**)**

Initial when trainee has demonstrated an understanding of or familiarity with:

____ The features and operation of the LCLS Hutch Protection System.

____ The reason for the requirement that the Search Leader guard the hutch door until completion of the search timer.

____The trainee has correctly performed the role of Search Leader in an actual or simulated search.

____ The correct procedure for transferring possession of the NEH Hutch1 Search Preset Key, logging of that transaction, and the consequences of failure to correctly transfer possession of this key. (See the Key Control section on the following page of this workbook.)

Trainer * (Signature/Date):_____

* A list of qualified HPS trainers can be found in *XFD Staff Training Qualification Summary* [SLAC-I-030-50100-002]

Supervisor (Signature/Date):_____

What to do with this form when complete:

SLAC Employees: Make one copy to be retained by your supervisor, and one for the XFD Documentation Specialist to update the *XFD Staff HPS Training Record Summary* [SLAC-I-030-50100-001].

LCLS Users: Make one copy for your supervisor, and one for the Floor Coordinators so they can update the *LCLS User Training Summary* [SLAC-I-030-30600-003] posted at the beamline. Floor Coordinators will file this record in the appropriate folder in the Floor Coordinator file cabinet to be picked up and retained by the LCLS User Research Administration.

5.0 NEH Hutch 1 'Search Leader' Key Control Requirements

The NEH Hutch1 Search Preset Key is issued by the Floor Coordinator only to qualified search leaders. It is the responsibility of every search leader to:

- Always maintain personal control of the NEH Hutch1 Search Preset Key while it is issued to them, except for the transfer that occurs during a search as specified in the *NEH Hutch 1 Search Procedure* [SLAC-I-030-30200-002].
- Only transfer possession of the NEH Hutch1 Search Preset Key to another qualified lead searcher and log that transfer in the *NEH HPS Logbook* [SLAC-I-030-30100-002] located at the hutch entrance.

Note: Qualified search leaders include Floor Coordinators, Instrument Scientists, and Users who have been qualified as search leaders as shown on the LCLS User Training Summary [SLAC-I-030-30600-003] posted at the hutch entrance.

- Ensure that the NEH Hutch1 Search Preset Key never leaves the LCLS Near Experimental Hall. The last qualified search leader to leave the Near Experimental Hall area must return the NEH Hutch1 Search Preset Key to the Floor Coordinator.

Failure to adhere to the above requirements may result in **lead searcher qualification revocation**.

Lesson Learned Title: Ineffective Laser Lab Personnel Sweep ("Near Miss")

Lesson ID:
Date: June 18, 2007
Contact: Carter Ficklen, phone 757-269-7007

Classifier: Not Applicable
Reviewer: Gwyn Williams

Statement: During laser operations in the Jefferson Lab Free Electron Laser (FEL) Laboratory #1, control room staff unexpectedly discovered the presence of a worker in the laboratory. This discovery was made after a sweep to remove all workers was performed and laser operations were underway. The laser light was in operation for less than one minute when the worker was discovered and the laser light was immediately stopped. There was no exposure and no injuries to the worker. A DOE "near miss" occurrence report (ORPS #SC--TJSO-JSA-TJNAF-2006-0005) was submitted.

Discussion: A persistent problem with safety system administrative controls, particularly in an R&D environment, is that their effectiveness depends on the diligence of the person enforcing the control. Personnel performing safety sensitive tasks such as sweepers must exercise care to recognize when conditions have changed and be alert to recognize new potential hazards. Sweep techniques must be adapted to allow for changing room configurations. Persons performing sweeps are responsible for ensuring that the control is executed properly every time, and line management is responsible for enforcing controls. The importance of this diligence must be continually reinforced so that incidents like this do not occur. Engineering controls can force a sweeper to take their time and cover the required territory but are no substitute for being diligent in the personnel sweep search. Periodic evaluation of administrative and engineering controls is necessary to ensure that personnel are protected.

Analysis: Basic Lesson Learned messages from this event are:

1) Facility management should limit access to essential personnel.
2) Training for special hazard environments, such as laser labs, needs to ensure people understand the consequence and significance of alarms.
3) Emergency egress scenarios need to be considered in lab interlock design. In this event, laser lab door signage and hardware were inconsistent with function and did not allow prompt egress.
4) Sweep techniques must adapt to the changing room configuration. There was an obstruction created after the experimental setup was first approved.

Actions: Followup actions from this event included an extent of condition review. Specific actions are listed below:

1) Two to four sweep buttons in each FEL lab to verify that the sweep goes to all portions of the lab. There will be a sweep button in each walk-in hutch as well.
2) A verbal announcement is made that a sweep is occurring as the sweep begins.
3) A verbal announcement is made that lasing is to begin after the sweep has taken place and 30 seconds before beam is provided to the lab.
4) FEL visiting scientific users are briefed on this event and fully aware of applicable FEL protocols prior to initiating experiments.

Savings:

Keywords: Laser, Laser Safety, Laser Lab, Laser Interlocks

Hazard(s): Personnel Injury

ISM Code(s): Provide Feedback and Continuous Improvement, Perform Work Within Controls

Work Functions: Other

References:

Priority Descriptor: Blue / Information

View of Lab 1 from entrance door. Computer workstation is located along the wall on the right side of the lab, behind the magnet setup

Position of user at computer workstation in Lab 1. This view is from the right-rear corner of the lab.